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VOL. XXIII., No. 19. SEPTEMBER 16, 1926

THE JOURNAL OF PHILOSOPHY

HOW INTELLIGENCE DISPELS AMBIGUITY[1]

BY the instrumentality of what fundamental theory can the cognitive activity of the human mind properly be construed? Certain of the modern philosophers suppose that consciousness, like an immaculate radiance, infallibly reveals the object of knowledge; that objects of knowledge simply by being touched or encountered by the conscious mind become known; that immediate perception, in short, constitutes knowledge. Other more sophisticated modern philosophers separate objects of knowledge into a primary class of obvious certainties, distinguished from a secondary class of virtual certainties or uncertainties, holding that the certainties, when viewed, are really or truly known, but that the uncertainties are unknown until they have been so manipulated or shifted as to make them precisely exemplify the primary certainties that are eternally—or, speaking more strictly, always (at least) potentially—known. Certain other modern philosophers identify the cognitive mind with a class of supposedly ineluctible certainties, believing that mind, by conferring an inherent certainty of its own on uncertain objects of knowledge, coerces objects of knowledge into the (relative) condition of being known. Still other modern philosophers, who contest the existence of primary certainties, hold that the mind, by a dialectical conjugation of partial uncertainties, gradually elevates objects of knowledge towards the status of what is indubitably and unimpeachably (or absolutely) known.

No one of these capital theories of knowledge has hitherto been considered satisfactory, universally, in the world of philosophy; partly because no one of them is exempt from radical incommensurability with the facts of the case.

Were consciousness in fact, as Berkeley in some of his moods maintained, a candid untroubled radiance impartially illuminating objects of knowledge, whatever entered into contact with the conscious mind would be known; no error would be possible; and philosophy—the love of truth as over against indifference to the distinc-

[1] See footnote to the article by the late George W. Peckham in the previous issue of this JOURNAL, No. 18. This, the second chapter of a projected volume, was never completed. [Ed.]

tion between error and truth—would be a pointless, and consequently insignificant, impulse or disposition of mind.

The dualistic epistemologies, which assume that the form of all human knowledge is aboriginally given; that all human knowledge can be deduced from, or is involved in, some particular class of primary certainties (be they logical or mathematical formulae, or hypothetical simple impressions of sense), develop invariably to the thesis that reality is *less* than reality is manifestly and unmistakably discovered to be: either that, for example, nature is *really* only a set of incorporated differential equations; or that, for example, nature is *really* only a contingent procession of impressions or presentations—all legitimate general ideas being merely *abstractions*, and the general ideas of physical science not being—for the most part—even abstractions abstracted from anything sensibly real. The logical evolution of the dualistic epistemologies, therefore, is checked by the existence of a something that, on their assumptions, can neither be explained nor explained away; what, namely, remains of nature after the aspects of nature that correspond to the supposedly primary certainties (of whatever sort) have been subtracted from what nature is currently and necessarily taken to be. The (supposed) error in the mind, responsible (supposedly) for the notion that this residuum (commonly called "appearance" or "illusion") *does* exist, can not be derived from the primary certainties (for certainty or truth could engender no error); nor from virtual certainty, or what nature is found to be, (since all nature, it is assumed, impeccably corresponds to, or rigorously exemplifies, the primary certainties). Consequently, the dualistic epistemologists, Descartes and Locke, and more clearly Spinoza and Hume, conclude that, although the human mind does err, its erring is—somehow—an accidental event; that were consciousness the blank, unstained, or emended radiance that consciousness, as they conceive, *should* be, the mind's cognitive activity *would* proceed unerringly. The dualistic epistemologies, in a word, are constructed on an assumption as to what the knowing mind *should* be; namely, neutral or impartial. But as a matter of fact the human mind is not, and can not be, impartial or neutral throughout the course of its cognitive activity.

To identify the cognitive mind with particular (supposedly) primary certainties, according to the epistemological procedure of Kant, although it constitutes a recognition of the fact that the mind is not, and can not be, passive, or merely receptive, during cognition, leads to a number of desperate difficulties, which may be summarized briefly as follows: Were the cognitive mind identical with *any* form, the fact of this identity could never conceivably be known, since, to

determine or to define the identity, it would be necessary for mind to discern the mind as specifically formed over against a background larger than, and in a measure unlike, the specific (supposedly) ineluctible form; it would be necessary, in a word, for the cognitive mind to disengage itself temporarily from its (supposedly) absolute or intrinsic nature. Next, were the cognitive mind identical with the form of certainty, it would be as impossible to account for the particular errors, as it is impossible on the Berkeleian hypothesis of a consciousness altogether devoid of form: of a cognitive mind passively and blankly accepting impressions of objects of knowledge. Finally, were cognition the necessary imposition of any form upon objects of knowledge, cognition would involve the possible alteration of objects of knowledge. It is the office of cognition, however, to record what objects of knowledge *are;* knowledge, consequently, can *do* nothing to objects of knowledge: can not create, form, or transform, that which is known.

To suppose that cognition, in its essence, is an indefinite conjugation of partial uncertainties; that is. to elaborate Kant's imposition of a cognitive form upon an uncertain object of knowledge, into a progressive combination of partly uncertain cognitive forms, according to the epistemological procedure of Hegel, is to release cognition, theoretically, from its fixed obligation to record the *given* nature of objects of knowledge. Hegel endeavored unsuccessfully to engender otherwise familiar results of intellectual science from his dialectical conjugations; but, as has become manifest in the sequel, man's scientific or rational knowledge can not be duplicated or engendered by any dialectical exercise of the mind. A theory, indeed, undertaking to show how cognition generates or creates reality could, at best, scarcely have more than an indirect or fortuitous relevance to a veritable theory of human knowledge—a theory, that is, setting forth how man's mind systematically *discovers* realities existing independently of the process of cognition.

The epistemologies of Berkeley, Descartes, Spinoza, Locke, Hume, Kant, and Hegel, then, fail to render a satisfactory account of the relation—during cognition—of concepts of objects of knowledge, to objects of knowledge. Berkeley considered—justifiably—that to know any object of knowledge the mind must behold that object of knowledge *as it is;* he mistakenly maintained that the mind always does behold the object of knowledge directly, or *as it is;* he denied that the mind envisages objects of knowledge through concepts or "general ideas"; he attempted, in short, theoretically to abolish concepts of objects of knowledge, as distinct from objects of knowledge themselves. The dualistic epistemologists believe that *if* the human

mind could directly survey objects of knowledge, objects of knowledge would be beheld *as they are;* that if the human mind were emended or clarified—if it were swept clean of all concepts that do intervene between objects of knowledge and the mind's vision of objects of knowledge—the human mind would become an unerring and perfect instrument of cognition. Kant proclaimed that because concepts *must* intervene between the knowing mind and the object of knowledge, human knowledge is—as knowledge—irremediably incorrect. Hegel confusedly elaborated the notion that there are no objects of knowledge simply as such, but concepts only, interacting and clashing together. Schopenhauer and Bergson suppose with Kant that concepts unavoidably warp or distort human consciousness, thereby inevitably vitiating rational or conceptual knowledge; proceeding on the ground of this Kantian hypothesis they seek to invent a non-conceptual or intuitive species of knowledge, thus combining, after a fashion, the theory of Berkeley with the theory of Kant.

The quintessential problem about which all of these capital modern epistemologies gravitate, then, approximately speaking, is this: What can concepts, or ideas, or theories of things, be doing *between* the speculative vision of the human mind, and the things, or the objects of knowledge, that are given—absolutely as whatever they *are*—to be known or seen? Under the mobile curiosity of certain modern philosophers the precise identity of this pivotal problem has been lost in an interminable criss-crossing and interweaving of correlated and derivative problems which, in their complication and entanglement, have been regarded, not infrequently, as unamenable to resolution. Thus occasionally modern epistemological inquiry has run off into a train of peculiar conundrums and alternatives, which we may indicate succinctly in the following terms:

It has been argued: Does not the human mind always absolutely encounter or see whatever it does encounter or see? If so, how, conceivably, *can* the mind err? Whether what the mind does see be things, or ideas (or concepts), or a mixture of ideas (or concepts) and things, is not what the mind *does* see its object of knowledge? If beyond what the mind sees at a given time there happens to lie something else, must not this something else, when seen (if seen), be another object of knowledge, simply? Supposing, however, that the mind does see a primary thing (call it an object of knowledge) through a secondary thing (call it an idea, or concept, or form of thought), the distortion of the vision of the mind by the intervention of this concept could be ascertained by the mind only if the mind could push the idea or concept away from between itself and its

object of knowledge. But if the mind could thus push apart, or distinguish, concept and object, what it would see when a concept had been pushed away from in front of an object of knowledge, would be *two* objects of knowledge, merely, instead of one—similar or dissimilar as the case might be. Now, in so far as the mind distinguished concept from object, the mind, obviously, would not err; and in so far as the mind did not distinguish concept from object, the mind, even if it erred, would not know that it did err. If the mind could know that it did err, in knowing that it erred it would cease to err; but if the mind did not know that it did err—if the mind did not take what it did see to be something that it did not see; if it took what it saw to be simply whatever it did see—then, obviously again, the mind would not err. Hence, even supposing that objects of knowledge were masked by intervening concepts or ideas, error, none the less, still would be inconceivable. The cognitive function or use of concepts, moreover, would, in any case, be a hopeless mystery. No comfort, consequently, is to be found either in the assumption that the form of the mind's knowledge springs directly from the form of the mind's object of knowledge; or in the assumption that the form of the mind's knowledge is originally resident in the mind itself. All types of epistemological theory, in fine, are inept. No matter where mind cuts into anything of whatever sort, mind is aware of precisely that, what ever it may be, which mind *does* strike upon, or intersect. No aberration of the cognitive sensitivity of the mind from wherever that sensitivity may at any time be, is logically feasible or conceivable.

It is further argued: If one could *not* distinguish true ideas from erroneous ideas, science would be inexplicable and impossible; but if one *can* distinguish true ideas from erroneous ideas, true ideas must be identifiable by some kind of a mark such as clarity, or distinctness, or immediacy, or simplicity, or compatibility with other ideas, or practical usefulness. To know that true ideas are an especially marked species of ideas, however, is to know that all truth, and all reality consequently, is distinguished by a particular nuance, or quality, or specialization. On the only imaginable supposition, therefore, that renders sciences possible, mind must possess an unlimited knowledge *a priori*. But to have an *a priori* knowledge is to know what objects of knowledge must be, or are, before one does know what they are. If, then, to sum up, science *can* be defined, science can not be science; but, on the other hand, if science can *not* be defined, science can not intelligibly be discussed at all.

Again, it is argued: If, after starting from the assumption that to know a particular thing is to survey that particular thing un-

modified in its pristine condition, one proceeds to discover that the mind, in cognition, *must* coerce or constrain objects of knowledge into conformity with whatever the mind may in particular be, one should thereupon conclude: not that—because cognition alters or disturbs objects of knowledge—cognition is *not* cognition; but that cognition *is* an alteration or transmutation of objects of knowledge. Fidelity to the notion that what one means by "knowing a thing" is observing what that thing definitively *is*, should be deemed an over-simple, uncritical, and even ridiculous, prejudice. Why, indeed, should one fancy that one could decide what cognition ultimately or genuinely is, independently of special technical investigations? Objects of knowledge, certainly, can not be known before they are known; and, unquestionably, all cognition *defines*—in the sense of literally de-termining—reality. To suppose that the undetermined could be determined and still be indeterminate, is like dreaming that darkness, blind and pure, could be *seen* by an instantaneous production of light.

Now the occurrence in consciousness of concepts or ideas always, without doubt, would serve simply to distract the cognitive activity of the mind, if the mind could behold or apprehend at a single stroke everything that any particular object of knowledge is. But since *every* object of knowledge is an unfathomed abyss of properties or qualities partly known and partly unknown, a (necessarily limited) consciousness, launched at random into the obscurity of the unknown portion of an object of knowledge, would always, or ordinarily at least, dissipate or extinguish itself without the achievement of any significant discovery. Every object of knowledge with which man's mind cognitively busies itself resembles an area of indefinite darkness surcharged with some luminous character or design which identifies the object of knowledge in question, and which is what the mind *already* knows concerning that particular object of knowledge. In undertaking to spread the illumination of its consciousness into the shadowy portion of the chiaroscuro that every object of knowledge is, the mind (since its consciousness, if passive or neutral, would be dissipated or lost in the unknown portion of the object) tentatively preforms its consciousness, and projects this tentative prefiguration or pattern into the dim or invisible portion of the object of knowledge. The form, concept, method, or category, through which consciousness thus advances towards the obscure or unlighted portion of the object, consequently, is a second luminous character or design tentatively inferred or superimposed on the object of knowledge. While it subsists in the inquiring consciousness, therefore, the object of knowledge partly is what it seems, but partly

may not be what it seems to be; and the cognitive mind may wander or err from the genuine nature or reality of its object, because the mind may take what is (perhaps) *only* a prefiguration or filigree of its consciousness, for a character actually or really inhering in the object of knowledge itself.

The cognitive mind, then, does not always absolutely encounter or see whatever it does encounter or see; it does not simply *hit upon* objects of knowledge, or cleanly *cut into* the subject-matters it scrutinizes: partly it meets or sees its objects of knowledge through the traceries or forms of its proper attention, which may or may not eventually introduce it to originally invisible or intangible properties or qualities in the objects of knowledge. Apart from its (accidental) astriction to habitual or familiar methods of paying attention the cognitive mind *can* distinguish its concepts from its objects. But to divest any object of knowledge of the concepts or ideas through which consciousness is attempting to advance into the object, would be to renounce altogether, or to abrogate, the investigation of the object: would be to see in the object only what the mind, to begin with, had seen in that given particular object of knowledge. All ideas, finally, that are true have this mark or characteristic in common: each resembles something not directly beheld (during the earlier part of the act of cognition) in the object of knowledge to which the idea is being applied. Every idea known to be valid or true is an idea that already has led to an apposite discovery in its object. Since, then, every idea that is true is a *theoretically useful* idea in this special sense, a definition of science is possible; but this definition of science by no means regulates or restricts the character or nature of the mind's objects of knowledge in general, and bestows on the mind no element or jot of *certain a priori* knowledge. Every category or idea is, without doubt, an *a priori* knowledge of its object; but this *a priori* knowledge may not always be true and, in consequence, never, in any case, can be *necessary*.

We hold, then, that cognitive ideas, concepts, hypotheses, or categories, resemble *lenses* in that they concentrate the light of the conscious mind upon possibly actual features or properties in objects of knowledge. During every methodical act of cognition the mind starts from a subject-matter already veritably known in part, or identified (if only by its hæcceity); next the mind invokes (by means presently to be formulated) some secondary subject-matter through which the mind proceeds, as through a magnifying lense, towards characteristics or properties not as yet directly perceived in the subject-matter being scrutinized or investigated; finally, the mind discovers in the subject-matter being scrutinized or investigated

something like the concept or idea that had been tentatively superimposed, as a mode or method of explanation, upon the primary subject-matter. Having discovered *in* the primary subject-matter (or object of knowledge) something like the mind's idea or conjecture concerning that particular object of knowledge, the mind either may recommence its investigation of the given object of knowledge by means of a tertiary subject-matter or secondary idea, or the mind may bring its heuristic attention to bear upon the undiscovered fraction of some other object of knowledge.

In order to exhibit more explicitly the specific use or function of concepts in the cognitive operation, let us analyze into epistemological terms one of the palmary achievements of nineteenth-century science. Pasteur's title to fame as an innovator in science rests primarily on his demonstration that so-called fermentative alterations or decompositions are *vital* phenomena. Milk, beer, wine, broth, blood, and similar liquors, exposed to the atmosphere under ordinary conditions of observation, undergo changes of constitution described in general as fermentative processes. When Pasteur undertook to discover the underlying character (or substance) of fermentative processes, it was the theory accepted on every hand that fermentations are a species of chemical change purely and simply. Chemists believed that the oxygen or the ozone of the atmosphere, or particles of inanimate albuminous matter, simply by touching the unstable molecules of the fermentable liquors, catalytically induce the fermentative change. Pasteur, however, who by chance had observed that in a certain fermenting preparation containing right-handed and left-handed tartaric acid, only the right-handed tartaric acid was broken down during the process of fermentative change—and who believed that life, in general, is *dissymmetrical* activity—surmised that life, embodied in infinitesimal organisms, is the cause of the process of fermentation. According to Pasteur's method of apprehending or conceiving the process of fermentation, then, what holds true of life in general should also, in general, hold true of the process of fermentative change. Life, as we know, is manifested by organisms which grow, assimilate food, cast off the waste products of their metabolic activities, reproduce, and become inanimate, finally, in the event of death. According to Pasteur's theory, method of inspection, or concept, consequently, fermentation should be arrested by a lethal degree of heat, should not recommence in a sterilized preparation until the accession of new living organisms or their seeds had reanimated the matter of the fermentable liquor; and should correspond in kind to the particular species of living organism disseminated in the fermentable liquor. The general character-

istics of the process of fermentation which he searched for under the guidance of the special category or concept "vital phenomenon" Pasteur presently discovered and rendered obvious to the vision of every unprejudiced and competent mind. Pasteur discovered that substances in process of fermentation, subjected to a killing degree of heat, and subsequently insulated from contact with unsterilized matter—particularly from contact with atmospheric detritus or dust—even although directly exposed, at ordinary temperatures, to the free oxygen and nitrogen of the atmosphere, remain unfermented indefinitely. In order to prosecute his investigation of the nature of fermentation Pasteur found himself obliged to determine the life-history of the organisms that initiate and sustain fermentative change; and, by experiments appropriately devised, he proceeded to trace the habits of several varieties of micro-organisms, such as of certain organisms that cause lactic- and butyric-acid fermentations; of the organism that causes chicken-cholera (so-called); of the organism that causes the disease known as anthrax by its growth in the blood of living horses, cattle, and men; *etc.* Incidentally he showed that there is no spontaneous generation of any known micro-organism: that the minute animals and plants that teem in fermenting substances, like the larger obviously visible types of life, derive their being directly from living organisms of a similar kind, or from the spores or seeds of these particular organisms.

Reduced to its simplest terms Pasteur's magnificent feat of cognition, then, amounted to this: He brought his consciousness, at first, into contact with the already known characteristics of the general subject-matter "fermentation"; keeping his consciousness in contact with the already familiar pattern of this particular element of human experience, he turned his mind back, as it were, to contact with a second element of human experience: the general subject-matter "life"; having formed his inquisitive consciousness on this second element of human experience "life," he finally discovered certain already known characteristics of life in the antecedently hidden portion of his primary subject-matter, or object of knowledge, "fermentation." In short, he assimilated the process of fermentation to certain already obvious characteristics of life.

Life, then, or *vital phenomenon,* which had become Pasteur's cognitive concept or idea, directed his consciousness into precedently unillumined portions of the particular area of human experience "fermentation." But in consequence of the discovery of life as causal in the process of fermentation, not only was fermentation explained (in a measure), but the general subject-matter "life" was also (in a measure) heuristically *ex-plained.* Life, in one of its man-

ifestations, having been discovered to be the thing that does cause fermentation, it was theoretically clear (for example) that under whatever conditions fermentation can proceed, life can proceed. Having observed that certain fermentations proceed where there is no uncombined oxygen, Pasteur surmised and proved that *an-aerobic* organisms exist, and that, therefore, life is what life had never antecedently been known to be, *i.e.*, an activity sometimes maintaining itself where there is no uncombined oxygen. Pasteur's feat of cognition thus shows us the illumination of a primary area of human experience by a consciousness borrowing its light or form from an antecedently (apparently) dissimilar secondary area of human experience, followed by the heuristic illumination of the secondary area of human experience in terms of observed characteristics of the primary area of human experience (or primary object of knowledge); it shows us the light of consciousness moving between two subject-matters or areas of human experience and alternately explaining these areas of human experience in terms of each other.

This cursory analysis of Pasteur's palmary scientific conquest shows us that (sometimes at least) it is the function of ideas or concepts in the act of cognition to project the light of the mind into obscure or unknown aspects or features of objects of knowledge. Since whatever anywhere patently exists in human experience may reconditely or obscurely exist in other divisions of human experience, it is clear that any *characterized* distinguishable kind of experience possibly *may* be employed heuristically as a cognitive concept or idea; it is clear, in a word, that the distinction between "objects of knowledge" and "ideas" of objects of knowledge, is not a distinction separating substantively distinct varieties of beings or things, but a distinction between beings or things used in dissimilar ways by the cognitive mind. What is employed by the mind at one time as an "idea" for the exploration of some object of knowledge, may, at another time, itself be explored by means of some other element of human experience—perhaps, in fact, by means of an element of human experience in respect to which it has itself already fulfilled the rôle of an explanatory concept or idea—as, for instance, in the case of Pasteur's *vital phenomenon*, which served first to explain fermentation, and which was itself subsequently explained by what fermentation had come to be known to be.

The epistemological thesis to which we are now committing ourselves may be stated as follows: Any thing, in so far as that thing is immediately touched by consciousness, is known. Consciousness *might* indifferently sweep over the multiple landscapes of reality—

the past, present, future; matter, spirit; the extra-temporal entities of mathematics; and whatever else there may be to be known—fitting itself instantaneously, like light, to the various particular objects of knowledge upon which it is successively aimed or thrown. A certain viscosity or inertia in its actual nature, however, makes it requisite that, as a general thing, consciousness be brought to bear upon *what is to be known* through something similar that already *is* known. Consciousness requires to be introduced to immediate contact with each occurrent object of knowledge through the form of some other similar object of knowledge, upon which consciousness has already shaped or fitted itself. The eventual immediate contact of consciousness with an occurrent object of knowledge thus is preceded by a phase in the act of cognition during which consciousness is *partly* in mediate contact with its object of knowledge. The idea or concept in terms of which the mind *conceives* or *apprehends*—as is commonly said—its object of knowledge, precisely is this mediating or directing element. The idea is a lense focusing consciousness upon its object: a method or path along which consciousness seeks hidden characteristics or properties in its object: a map guiding consciousness into the intricacies of the object. Essentially consciousness, as one might say, is amorphous and anonymous (since consciousness may take the shape of anything that *conceivably can* be); actually, however, consciousness always is invested with some form or shape through which it proceeds towards the nature or shape of the reality it is tending to know. Let us suppose—to facilitate the exposition of our epistemological thesis—that consciousness is a light moving about inside of a hollow sphere upon the inner surface of which all reality is delineated or inscribed. The surface of this sphere is so folded, creased, wrinkled, and puckered that only a fraction of any part of the surface—which represents all reality—is, at a given time, exposed directly to the radiance of the mind. The act of the mind, in coming to know any fraction of the corrugated or folded surface, is the act of pushing back, or distending, that fraction of the surface: wherever any fraction of the surface is expanded, or thrust back, it unwrinkles itself; wherever the surface unwrinkles itself (although the characters or realities inscribed in the surface remain what they were) more reality is unfolded or ex-plained, and thus directly exposed, to the consciousness of the mind. As the properties of every bit of reality are infinite in number, so no matter how far any part of the surface is distended or explained, wrinkles and puckers remain in that part of the surface that have not yet been smoothed out, or that have not yet been explained. Within this total sphere of reality, then, consciousness moves about, not brushing

laterally, always, over the obvious aspects of the surface (not, that is, always—if ever—passively beholding such landscapes as obtrude themselves on the mind), but sometimes (at least) *methodically* penetrating and explicating realities. In the simplest sort of its methodical cognitive activity consciousness moves from the already obvious or lighted part of some fraction of the surface of the sphere, *across* the inside of the sphere, to contact with a more or less remote secondary fraction of the surface of the sphere. Having absorbed the form of the obvious part of this secondary reality, consciousness turns back, or is reflected, to the primary fraction of the surface of the sphere. The originally obvious aspects of the primary surface, or of the object of knowledge, still are directly lighted by the cognitive mind, but around or among these obvious aspects or features there is now the reflected (or in-ferred) image of the secondary reality, through which, next, the mind must attempt to project its consciousness into corresponding properties hidden in wrinkles or obscurities of the object. The image as at first superimposed on the object of knowledge may not direct the incident consciousness to an appropriate unwrinkling or discovery; the image, in such a case, will require to be shifted or twisted about until it has been so adjusted to the object as to lead consciousness to an eventual appropriate explication or discovery. Now since it is only in so far as the idea resembles the object that the idea can be useful in enabling the mind to explain, or to know, the object; since, furthermore, certain characteristics common to many realities always or usually cohere with certain other characteristics in the same realities—the mind can notably expedite its cognitive activity by paying attention chiefly to such characteristics in realities-used-as-ideas, as are usually or always contextual to certain other characteristics. If, when explaining a reality by means of another reality, the mind infers upon the primary reality only such characteristics of the secondary reality as are indicative of certain contextual characteristics in whatever realities the indicative characteristics occur, the mind absolves itself from the necessity of actually discovering the contextual or concomitant characteristics in the primary reality, or object of knowledge: the mind is assured by its stored-up experience that the special contextual characteristics are (certainly or probably) there. To expedite its cognitive operations, then, the mind abstracts from particular realities tell-tale characteristics, and maintains these tell-tale characteristics, or indicative abstracted properties, or skeletal images, along the customary paths of its motion from reality to reality across the interior of the hollow sphere. By stopping short in its motion from primary parts of the surface of the sphere to

secondary parts of the surface of the sphere: by going in the direction of secondary realities as far, only, as certain skeletal images built up inside of the sphere, and then back to the primary realities —the mind comes to use a general in-formation, rather than particular concrete formations, as means to the investigation of its objects of knowledge. By arranging systems of abstracted telltale characteristics along centrifugal branching lines, in such a manner that the abstracted property at the center of any such system is indicative of an especially important set of contextual characteristics, or of a set of contextual characteristics very widely distributed in realities with regard to which the system is likely to be used for heuristic purposes; by placing at the points where the centrifugal lines first branch other abstracted properties indicative of contextual characteristics only less important, or less widely distributed, than the contextual characteristics indicated by the property fixed at the central point, *etc.;* the mind constructs for itself intellectual instruments that render possible a very rapid explanation, or cognitive penetration (to a definite level), of great areas of human experience. But whether the mind *knows* by moving from a reality to another reality, and back (what we have called the simplest sort of methodical cognitive activity); or by moving from a reality to some point in a structure of abstracted properties, and back;—in any case cognition involves: first, the identification of a reality; second, the conception of the reality with an apparently dissimilar form; and finally, the verification of the form by the discovery of something like the form in or around the reality.

GEORGE W. PECKHAM.

THE PHILOSOPHY OF RELATIVITY

1. *Renaissance of Philosophy.*—It is now generally recognized that philosophy has regained its leading position among other sciences so that the predicted decay and death of philosophy by positivists of the previous century turned out to be as wrong as the well-known assertion of Comte that "we shall never be able to study the chemical composition or mineralogical structure" of the heavenly bodies. For science, disregarding the false prophecy of Comte, broke through the positivistic dams, and at the very moment when Comte's ideas about limiting science became plausible Kirchoff and Bunsen with the spectrum analysis appeared on the scene. A wonderful epoch was at hand, an epoch of astrochemistry, of electrical theory of matter (J. J. Thomson), of the conquest of the atom (E.

Rutherford), of atomic astronomy (Bohr), of the quantum theory (Planck), and relativity (Einstein). Not only this but also an astoundingly flourishing age of philosophy par excellence followed the passing-bell of positivism. These achievements have disproved the contentions of those who would set limits or boundaries to science and knowledge, and banish philosophy from the realm of reality. Concerning philosophy it is well to compare Whitehead's *The Principle of Relativity,* where he fully emphasized the rôle of philosophy, at least, for times of reconstruction or, as Whitehead says, reorganization of science, with *The Biographical History of Philosophy* (1857) by George Henry Lewes, a book which is almost a flowery obituary of philosophy.

Our age is really characterized (apart from the marvellous progress, unimaginable to previous ages, in technical invention which reached its acme in telemechanics and television) by an unsurmized renaissance of philosophy, mathematics, logic, epistemology, and metaphysics. The new metaphysics is, however, no more a "walking in darkness" or "building of air castles," but is solidly based, methodologically, upon what one may call meta-mathematics, that is, upon Lobatchevsky's pangeometry or any other non-Euclidean geometry; upon Cantor's transfinite or meta-arithmetic, upon Hegel's dialectics or meta-logic; Bergson's intuitionism or meta-epistemology; and the like. As to modern relativity it is only a hegemony of mathematics (and, in Einsteinism, partly also of meta-mathematics) and philosophy over physics. At least, it is the result of welding mathematics, physics, and philosophy together, relativity being mathematical in its form and physical in its contents, but philosophical in its essence.

2. *Relativity and the Absolute.*—Relativity, as pointed out chiefly by Bertrand Russell, does not deny the absolute, it sets no limits to science. Whitehead is therefore quite right when he seeks to replace the term "relativity" by *relatedness* which is more correct and less misleading. After all precautions there remained, however, a great confusion about relativity, which is increasing in proportion to the popularity of the theory.

Relativity by no means implies that the world must be relative (in the sense of non-absolute) or finite. But the public makes relativity responsible for the theory of the finiteness of the world which is a return to pre-Cusanian time. Likewise we venture to assert that the widespread opinion that relativity necessarily implies the renouncement of absolute space and time and motion is not correct, although this groundless view has high authorities behind it. It is true that "when space and time are relegated to their proper source —the observer—the world of nature which remains appears strangely

unfamiliar" (Eddington). Not entering here upon the question whether nature as stripped of space and time can be called "world" or cosmos, which implies arrangement, hence relativity, let us only ask: Does it follow, from the relegation of space and time to the observer, that they are relative (in the sense of non-absolute)? Our answer is: No. We may unreservedly agree that space and time depend upon the observer, but then, space and time will be relative only because the standards of reference of the observer are relative. But they will not be relative essentially. Suppose the observer, for example, God, has an absolute standard of reference or method, then space and time, just because they depend upon the observer, will be *absolute.*

However, we fully agree with Bertrand Russell, who thinks relativity not in subjective terms, but in objective ones. In our estimation relativity does really depend, not upon the observer, but upon the objective standards of reference invented and realized in science and technics. The problem of philosophical relativity and absolutism can be decided only methodologically, by examining and investigating the old standards and methods, and determining whether they can be thought in terms of the absolute. In such a way, simply by applying the principle of relativity, we can come to formulate the problem of the absolute in terms of relativity. The problem will then be: Are we able to invent absolute standards or methods?

Theoretically speaking, we are. We have no reason whatever to deny the possibility of inventing a methodology of the absolute. For we contemporaries do not recognize the limitedness of the inventiveness of the mind, a doctrine which is based upon a non-scientific induction and has in our days of great inventions in technics and science and methodology been refuted. Since it is not possible, at least to us now, to embrace the absolute empirically we must confine ourselves to methodological contemplation of it. That the absolute wasn't clear to Herbert Spencer does as little matter as the fact that the radio was likewise not known to him and spectrum analysis seemed to be a chimera to Comte.

What matters is not the notion of the absolute and much less the clarity of it (for if every universal is dim, the highest universal is dim all the more), but the methodology. But as no one can any longer assure us that tomorrow no new geometry or new arithmetic or new logic will be created, who will dare to prohibit the thought of a geometry of the absolute?

At any rate, relativity itself must be thought absolute. One relativity system is historically replaced by another, a larger one, as, *e.g.,* geocentrism by heliocentrism. Relativity systems will be continued

ad infinitum in space as well as in time, for the cosmos and history are actually or potentially not only infinite, but transfinite. We must admit the absolute (as Cantor says, the absolute great) or the all (the absolute all). Likewise in the other direction, by telescoping the relativity systems to a proton and electron, we must in transfinite time arrive at the absolute infinitesimal. Although the latter is denied by Cantor, it is asserted by Hegel, who is here logically correct starting in logic with absolute nothing, zero, as we all do in arithmetic. It follows that relativity is in no way equivalent to "relative," but to *relational*, a term which, if it were to replace relativity, would save us from all that confusion which is caused by the use of the latter.

Relationality and absoluteness are merely a twofold oneness, only *two* aspects, nay, *one* aspect, of the cosmos which is *relational* within and *absolute* without. Likewise the "within of history" is relational, but the "without of history," that is, the future, is absolute. Any given cosmic relativity system taken asunder is relational, but all of them together (with their potentiality, to be extended further and ever further, regarded as actuality, that is, as already realized) are absolute. All consecutive cosmic relativity systems are inclosed in the absolute system due to which their extension is possible without stint. The infinite leads to the absolute which frees it from its inner contradiction, else the infinite can not stand and falls back upon finiteness. Similarly, all relativity systems of history, past, present, and future, taken as one totality, constitute an absolute system.

3. *Philosophical Relativity.*—Cosmological relativity coincides with philosophical relativity, both equally meaning relationality, which is equivalent to structure, to use physico-biological terminology, or system, to use logical and philosophical language. We speak, therefore, of the structure of the universe and the system of history.

The principle of relativity, conceived as relationality, really has been the *leit-motif* of science and philosophy almost from their very beginning in India and Greece, but was especially emphasized by Hume, Kant, and more than all by Hegel and Herbert Spencer, these latter two philosophical antipodes being at one in considering relativity as the first principle of science and philosophy.

Relativity (and let us not forget that whenever we use relativity it means relationality) is only a modern formulation of the old postulate of uniformity or, as others call it, lawfulness or orderliness of nature. It has always represented the first principle of science and philosophy, at least from the days of Pythagoras, who considered the world as a cosmos, as a well-ordered unity, in a word, as a relativity system.

Moreover, relativity was always the first principle of every reli-

gion, and even of every mythology, magic and art, primitive and contemporary, useful and fine, since not only every machinery and craft, but also every action which is not a mere reflex, represents a relativity system, as does also every intentional thought or fancy or volition.

However, this relativity was not pure relativity and therefore very far from that of Einstein. It was more qualitative than quantitative, more adjectival (Whitehead) than relational. This relativity was considered to be inherent, nay, to be an inherent teleology, ruled by the Final Cause, *τὸ οὗ ενεκα καὶ τἀγοιθὸν*, the purpose and end (Aristotle). Nowadays "purpose and end" are ascribed by sober scientists, among whom Rickert is to be counted, only to culture. Inherent teleology has been long obsolete even in biology, having been repudiated by Darwin and especially by Metchnikoff, who with his theory of the disharmonies of the human body gave rise to modern eugenics. The multiplication process in which the ancients saw a divine purpose is now laid bare before our eyes by the scrutiny of modern science as the most chaotical and purposeless contingency to be met in nature. Malthus and Darwin and modern birth-control, however different our relations to them may be from the standpoint of morality, prove it beyond doubt. Our investigations in the realm of breeding among animals in our work, *zoopedology*, led us to the fatal teleological fact that among some varieties the female spider and male spider devour each other while in copulation. However, from time to time a recrudescence of inherent teleology and inherence in general occurs (Leibniz's and Lotze's monadology, partly Driesch's vitalism-entelechy, Bergson's creative evolution, Russell's qualia, and several conceptions of the world as an organism).

Yet as a rule this inherent teleology was reduced by modern science, which was essentially mechanistic, as it is now electrical and relational, to a pure causality, to a dualistic system of cause and effect (without a third link of "purpose and end") which wearied the philosophers with its inconsistency. For if the effect is equivalent to the cause, then there is no cause and effect at all, but identity (Ribot); but if the effect is not identical with the cause then there is the creation out of nothing; a dilemma with which the principle of evolution is especially faced. As a result, the principle was modified into conditionalism (Max Verworn), then transformed into functionalism (Avenarius), and finally changed into relativity—relativity representing a mere phenomenalistic arrangement and rearrangement. There is no longer a causal nexus between events, we may even say, no longer a sequence, but a separation and arrangement of events in time. As relativity is heterogeneous you may

deny of it not only intrinsic causation, but also interaction, parallelism, and even mere sequence. Relativity is evidently no peculiar physical principle, but a general fundamental principle of science as such, a principle which runs through the whole history of culture which can be summarized as being essentially a downfall or a rise from teleology to causality, and from causality to relativity. Whether we think it is a rise or a downfall depends upon our standards of evaluation, upon our thinking of the arrangement of the cosmos in terms of inherence or heterogeneity. Relativity can even hardly be called a "principle" at all, if we were exact and did not deviate from the old sense of this term (*principum*, beginning, *primus, prima*, first) which is associated with causality. Relativity is rather a method, relativity being the modern first axiom not only of mathematics, but also of logic and epistemology, and hence of general methodology which comprises all methodological or formal disciplines.

From this standpoint the service of Einstein consists only in introducing this general first axiom or rather postulate or, better, method, from general methodology into physics, and thus replacing the obsolete causality as a remainder of occult qualities, and inherence in general. Causality had really a bad time in the previous century. It had to grapple not only with philosophical difficulties pointed out already by the ancient sceptics, but also with its own complications; with chemical causality, with an effect entirely inconvertible, evidently not equivalent to the cause; with biological causality multiplying according to Malthus in geometrical progression *ad infinitum;* with sociological causality, attacked by Ward; and, latest, with psychological causality, which is repudiated altogether by all modern psychological systems, from associationism to behaviorism.

Husserl's intentionalism, the culmination and overcoming of Wundt's voluntarism, as well as the modern physiologo-psychological reflexology (Pawlov), and social reflexology (Bechterev), to say nothing of psycho-analysis, behaviorism and psycho-technics, constitute an *expressional* psychology, representing a reversal of the old doctrine of passive "representationalism," of the photographic mind-plate, of Descartes and Locke, of impression (Hume), and mirroring the world (Leibniz). The centripetal psychology is replaced by a centrifugal psychology, which lost even the shadow of the lax causality of the former. As our world of things in space is not causal, but extensional, so is our world of events in time. It, too, is not causal, but extensional in time, which it is better to term "intentional." Space-time (Minkoweski, Alexander) as a higher unification is surely intentional and hence not causal, but construc-

tive. The world in space-time is intentional and constructive, to say nothing of the world of ideas and culture, of technics and science. It is not an inherent teleology and causality, but a heterogeneous intentionalism. Rigorous physicists are no longer speaking of a mythological inherent teleolgy or causality and much less of a causal teleology which is called evolution, but of a *structure* of the cosmos and hence of a heterogeneous cosmic *intention* and *construction*. Likewise there is no inherent economy of the world and thought, but there is, no doubt, a heterogeneous constructive economy of the world as well as of thought (Avenarius-Mach). The world of mechanics and astronomy is a construction, as is the world of the concept, of logic, and even of perception, of psychology; for both percepts and concepts are intentions (Husserl) and constructions (Cassirer); not impressions, but expressions. Since a concept is a construction, then a theory is a construction all the more. An electrical theory of matter means, then, an electrical construction of the world; for not only chemistry with its technology and even with its periodical system of elements, or chemical series (Mendeléef), but also physics, is a modelling and moulding the world; and hence not an inherent causality, but a heterogeneous *construction* (Duhem). In general the whole modern civilization based upon technics (enlarged to include bio-technics, socio-technics, psycho-technics and culturo-technics) is surely upsetting the traditional causality with its doctrine of occult or inherent characters and functions. The constructions of technics and experimental science are not "causal," in the old sense of the word, not being immanent, inherent, but *heterogeneous* and *artificial*. They do not *evolve* of themselves, but are *created* by man.

It was Hume in modern time who rendered the first blow, which has turned out to be a death-blow, to causality. But mathematics and logic (lately the so much decried, by all kinds of pragmatists, humanists, and cheap utilitarians, formal logic) long, long ago, almost from the days of Aristotle, freed themselves from causality with its doctrine of inherent qualities, although Aristotle still retained some relics of Pythagorean mathematical occultism when he asserted that the heavenly bodies must move in a circle because they are holy and the circle is the perfect mathematical figure. It was a very happy idea on the part of Avenarius to turn anew to mathematics and borrow from it the concept of function in order to purify experience and replace the antiquated principle of causality.

But it was not until Einstein came that matters were smoothed and simplified by the principle, or rather method, of relativity. It is not the first time in history that science is readjusted and freed from difficulties by founding it anew upon pure mathematics and

pure philosophy. So did Descartes. Now the reform of Avenarius-Mach is revolutionized by Einstein. At any rate, the thing is made clear that relativity is a pure philosophical principle just as is causality, which it will replace as the various sciences are mathematized.

W. GORDIN.

NEW YORK CITY.

BOOK REVIEWS

The Evolution of Logic. HENRY HORACE WILLIAMS. Published by the author, Chapel Hill, N. C. 1925. xiv + 181 pp.

The title of the book indicates the author's conviction that the purpose of logic is not to work out a formal scheme of thinking, but to exhibit the development of thought as a vital process. The epistemological representation of reality as the unattainable goal of intellectual endeavor, is replaced by the metaphysical conception of reality as the origin of intelligence. On the basis of this presupposition, the introductory chapter undertakes to refute the formalistic logician. He is charged with the vice of sceptical self-annihilation; for "those who accept the statement that intelligence has no reach beyond the form, do not admit the statement to be formal." He is charged, moreover, with the vice of artificial isolation; for he suggests that "everything has vital connections except the intelligence."

According to Mr. Williams, intelligence manifests itself as a double power: the power to construct, and the power to recover. As constructive power it is able "to advance, to make progress, to take a journey without leaving home." As the power to recover it "enters into its other, its opposite . . . and sees his process." In the one case it exhibits *itself* in the form of *truth,* in the other it exhibits *nature* in the form of *law.* Law is defined as unity in action difference, truth as unity in structure difference. Since both can be conceived only as processes, the logician can not become the metaphysical attorney of intelligence unless he transcends the work of the scientist as well as of the formalistic logician. The scientist who formulates laws is engaged in determining the ultimate unity in action. But the ultimate difference lying beyond his reach, he must resign before an eternal residue which prevents his work from becoming complete. In a similar way the logician who formulates the static principles of reasoning tries to exhibit the ultimate unity of structure. But since he disregards the ultimate difference, his postulate that of two contradictories one must be false, is superseded by the dynamic process of dialectics.

The metaphysical logician is concerned with both the unity and

the difference. And seeing them in relation to each other, he discovers that action and structure, nature and thought, express the same dialectic process—"a process that maintains itself in and through opposites."

In the course of the book the different phases of that process are worked out in detail. They are first exhibited within and between the categories of quality and quantity, the interaction of which gives birth to the *quantum*. The organization of *quanta* involves the category of relation which splits into the three forms of direct, reversed, and reciprocal relation. The problem, how to organize the interdependence of quantity, quality, and relation, demands the introduction of standards implying the problem of evaluation. The problem of evaluation leads, finally, to the discussion of ultimate justification—a discussion which can again proceed only by the dialectic method. The book ends with a demonstration that the relation between the universal and the individual is reciprocal, and that in it the form of the particular originates.

EDGAR WIND.

UNIVERSITY OF NORTH CAROLINA.

JOURNALS AND NEW BOOKS

PHILOSOPHICAL REVIEW. Vol. XXXV, 5. The Problem of Knowledge from the Point of View of Dualistic Realism: *J. H. Ryan.* The Dependence of Thought: *A. L. Hammond.* American Neglect of a Philosophy of Culture: *P. A. Schilpp.* Thomas Brown: Associationist(?): *M. W. Landes.* Primary and Secondary Qualities: *G. D. Walcott.*

SCIENTIA. Vol. XL, CLXXII–8. The Roman Numerals. II[a] Part: Other Problems of their History: *D. E. Smith.* Costituzione individuale e parabiosi: *B. Morpurgo.* Le peuplement de l'Amérique précolombienne: *P. Rivet.* Der geistige Orient: *M. Horten.*

Brosch, Pius: Die Ontologie des Johannes Clauberg. Eine historische Würdigung und eine Analyse ihrer Probleme. Griefswald: L. Bamberg. 1926. 110 pp.

Buonaiuti, Ernesto: La Religione nella Vita dello Spirito. Rome: Editrice "Richerche Religiose." 1926. xxxi pp. 2.50 L.

University of Chicago Abstracts of Theses. Humanistic Series, Vol. II. (1923–24). Chicago: University of Chicago Press. 1926. xi + 507 pp.

Hazlitt, Victoria: Ability. A Psychological Study. New York: Macmillan Co. 1926. ix + 147 pp.

Jascalevich, Alexander A.: Three Conceptions of Mind. Their

Bearing on the Denaturalization of the Mind in History. New York: Columbia University Press. 1926. viii + 107 pp. $2.00.

Lacau, John: The Jubilee at Home during 1925 and 1926. Appendix to "Precious Treasures of the Church's Indulgences." Turin: Marietti. 1926. 104 pp.

Lichtenberger, Henri: The Gospel of Superman. The Philosophy of Friedrich Nietzsche. Translated from the French by J. M. Kennedy. New York: Macmillan Co. 1926. xxxiii + 219 pp.

Maitra, Sushil Kumar: The Ethics of the Hindus. Calcutta: Calcutta University Press. 1925. xvii + 344 pp.

Mukerjee, Subodh Chandra: Le Rasa. Essai sur l'esthétique Indienee. Paris: Félix Alcan. viii + 128 pp.

Picard, Gabriel: Archives de Philosophie, Vol. IV. Cahier I. Essai sur la connaisance sensible d'après les scolastiques. Paris: Gabriel Beauchesne. 1926. 93 pp.

Sorley, W. R.: Tradition. (The Herbert Spencer Lecture delivered at Oxford, May 19, 1926.) Oxford: Clarendon Press. New York: Oxford University Press, American Branch. 1926. 24 pp. 70 cents.

NOTES AND NEWS

SIXTH INTERNATIONAL CONGRESS OF PHILOSOPHY

HARVARD UNIVERSITY, CAMBRIDGE, MASS.
September 13–17, 1926

PROGRAM

Division A. Metaphysics, Philosophy of Nature, Philosophy of Mind, Philosophy of Religion. *Division B.* Logic, Epistemology, Philosophy of Science. *Division C.* Ethics, Theory of Value, Social Philosophy, Aesthetics. *Division D.* The History of Philosophy.

Monday, September 13th

8:00 P.M. OPENING MEETING

ADDRESSES OF WELCOME

Nicholas Murray Butler, *Chairman, in behalf of the Organizing Committee of the Congress*

A. Lawrence Lowell, *President, in behalf of Harvard University*

W. E. Hocking, *President, in behalf of the American Philosophical Association, Eastern Division*

R. C. Lodge, *President, in behalf of the American Philosophical Association, Western Division*

H. W. Stuart, *President, in behalf of the American Philosophical Association, Pacific Division*

PRESENTATION OF FOREIGN DELEGATES

RESPONSE IN BEHALF OF FOREIGN DELEGATES

Paul Lapie, *Rector of the University of Paris*

Tuesday, September 14th

9:30 A.M. DIVISION A, SECTION I

Subject: Physics and metaphysics, with special reference to the problem of time

Chairmen: W. P. Montague, Columbia; E. G. Spaulding, Princeton

Speakers: E. B. McGilvary, Wisconsin (Newtonian Time and Einsteinian Times)

Herman Weyl, Zurich (Time-relationships in the Cosmos)

A. N. Whitehead, Harvard

A. V. Vassilieff, Moscow (The acquisitions and enigmas of the philosophy of nature, to be read by C. I. Lewis, Harvard)

G. H. Mead, Chicago (The objective reality of perspectives)

9:30 A.M. DIVISION B. SECTION I

Subject: The status and relations of sensa and scientific objects

Chairmen: E. A. Singer, Jr., Pennsylvania; M. T. McClure, Illinois

Speakers: Edgar Wind, North Carolina (Experiment and metaphysics)

G. Dawes Hicks, Cambridge, England (Sensible appearances and material things)

Bruno Bauch, Jena

Harold Chapman Brown, Leland Stanford (Why the sensa?)

J. Gibson Hume, Toronto (A concrete universe; a Kantian sequence)

9:30 A.M. DIVISION C, SECTION I

Subject: The basis of objective judgments in ethics

Chairmen: George Herbert Palmer, Harvard; Theodore de Laguna, Bryn Mawr

Speakers: John A. Ryan, Catholic University of America

L. Lévy-Bruhl, Sorbonne

W. D. Ross, Oxford

Mary Whiton Calkins, Wellesley

George P. Adams, California

9:30 A.M. DIVISION D, SECTION I

Subject: Ancient Philosophy. The Socratic and Platonic elements in the doctrines of Plato's dialogues

Chairmen: G. S. Brett, Toronto; Paul Elmer More, Princeton

Speakers: John Burnet, Edinburgh (paper read by W. D. Ross, Oxford)
R. C. Lodge, Winnipeg (On a recent hypothesis concerning the Platonic Socrates)
Léon Robin, Sorbonne (Sur le Phédon)
Paul Shorey, Chicago
W. A. Heidel, Wesleyan (On the crucial test)

2:15 P.M. DIVISION D, SECTION I (*first session*)

Subject: Contemporary philosophy. Reports on present tendencies in different countries

Chairmen: E. L. Schaub, Northwestern; Woodbridge Riley, Vassar

Speakers: John Laird, Aberdeen (Great Britain, read by Leonard T. Russell, Bristol)
Frank Thilly, Cornell (The United States)
Raffaelo Piccoli, Naples (Italy)

3:30 P.M. COMMITTEE MEETINGS

8:00 P.M. DIVISION A, GENERAL SESSION

Subject: The hypothesis of emergent evolution, its meaning and the present state of the argument concerning it

Chairmen: James R. Angell, Yale; H. S. Jennings, Johns Hopkins

Speakers: Hans Driesch, Leipzig
H. Wildon Carr, London
Arthur O. Lovejoy, Johns Hopkins
W. M. Wheeler, Harvard

Wednesday, September 15th

9:30 A.M. DIVISION A, SECTION 2

Subject: Philosophy of religion, with special reference to mysticism in East and West

Chairmen: Felix Adler, Columbia; James B. Pratt, Williams

Speakers: Edwin D. Starbuck, Iowa (The empirical study of mysticism)
S. N. Dasgupta, Calcutta (Eastern and western mysticism)
Helmuth von Glasenapp, Berlin (Der Pragmatismus in der Philosophie der Inder)
Charles A. Bennett, Yale (The paradox of mysticism)
Edward Scribner Ames, Chicago (The mystics: their experience and their doctrine)

9:30 A.M. DIVISION B, SECTION 2

Subject: The doctrine of subsistence and essences in current logic and epistemology

Chairmen: G. A. Tawney, Cincinnati; Edmund H. Hollands, Kansas

Speakers: R. W. Sellars, Michigan (Essence and existence)
R. F. A. Hoernlé, Witwatersrand
Moritz Geiger, Göttingen (The phenomenological method)
A. W. More, Chicago

9:30 A.M. DIVISION C, SECTION 2

Subject: Aesthetics

Chairmen: J. Gibson Hume, Toronto; W. A. Hammond, Cornell

Speakers: Stephen C. Pepper, California (Description of æsthetic experience)
Nicolai Hartmann, Cologne (Ueber die Stellung der ästhetischen Werte im System der Werte überhaupt)
De Witt H. Parker, Michigan (Wish fulfilment and intuition in art)
T. Yamada, Tokyo (The æsthetics of the Japanese "No" drama)
Ivy G. Campbell, Wells (Objective form and its rôle in æsthetics)

9:30 A.M. DIVISION D, SECTION 2

Subject: Mediæval philosophy, with special reference to the problem of creation

Chairmen: Edward A. Pace, Catholic University of America; James H. Woods, Harvard

Speakers: William Turner, Buffalo (Rationalism and mysticism in the scholastic movement)
Étienne Gilson, Sorbonne (L'étude des philosophies arabes et son rôle dans l'interpretation de la scolastique)
Tjitze de Boer, Amsterdam (The Moslem doctrine of creation)
Harry A. Wolfson, Harvard (The problem of creation in mediæval Jewish philosophy)
Duncan B. MacDonald, Hartford (Continuous recreation and atomic time in Moslem scholastic theology —A statement and a question)

2:30 P.M. DIVISION D, GENERAL SESSION

Subject: The rôle of philosophy in the history of civilization

Chairmen: A. C. Armstrong, Wesleyan; Alexander Meiklejohn, Wisconsin

Speakers: Henry Osborn Taylor, New York
Étienne Gilson, Sorbonne
John Dewey, Columbia
S. Radhakrishnan, Calcutta
Benedetto Croce, Naples (The modern conception of philosophy, read by Raffaelo Piccoli, Naples)

5:15 P.M. Visit to exhibition of philosophical books, Treasure Room, Widener Library, conducted by Benjamin Rand, Harvard

Thursday, September 16th

9:30 A.M. DIVISION A, SECTION 3

Subject: Philosophy of mind, with special reference to the nature of community between minds

Chairmen: H. N. Gardiner, Smith; Durant Drake, Vassar

Speakers: Philip E. Wheelwright, New York University (Self-transcendence as essential to personality)
J. A. Smith, Oxford
Wilmon H. Sheldon, Yale (Immaterial non-mental reality)
H. A. Overstreet, College of the City of New York
Will Durant, New York (Behaviorism and philosophy)

9:30 A.M. DIVISION B, SECTION 3

Subject: The bearing of the distinction of judgments of value and judgments of existence upon logic and epistemology

Chairmen: H. B. Alexander, Nebraska; Walter G. Everett, Brown

Speakers: Wilbur M. Urban, Dartmouth
F. C. S. Schiller, Oxford
Leonard T. Russell, Bristol
William B. Savery, Washington
A. P. Brogan, Texas (The implications of meliorism concerning the relation between value and existence)

9:30 A.M. DIVISION C, SECTION 3

Subject: Aesthetics. Philosophy of law

Chairmen: Norman Wilde, Minnesota; Thomas Reed Powell, Harvard

Speakers: Ethel Puffer Howes, Smith (The foundations of aesthetics)
Moritz Geiger, Göttingen (Ueber Oberflächenwirkung und Tiefenwirkung der Kunst)
Morris R. Cohen, College of the City of New York (Positivism and the limits of idealism in the law)

Fernando de los Rios, Granada (The religious character of the Spanish Government in the XVI Century and its influence on colonial law)

9:30 A.M. DIVISION D, SECTION 3

Subject: Mediæval and modern philosophy

Chairmen: G. Watts Cunningham, Texas; J. A. Leighton, Ohio State

Speakers: A. Birkenmajer, Cracow (Witelo im Lichte der neuesten Forschung)

Mehmed Ali Ayni, Constantinople (Ismail Hakki)

Léon Noël, Louvain (L'épistémologie néo-scolastique)

James H. Ryan, Catholic University of America (Neo-scholasticism as a contemporary philosophy)

Benjamin Rand, Harvard (John Locke and Samuel Clarke, 200 unpublished letters)

Léon Robin, Sorbonne (Octave Hamelin)

AFTERNOON. EXCURSIONS

8:00 P.M. DIVISION C, GENERAL SESSION

Subject: Philosophy and international relations

Chairmen: James H. Tufts, Chicago; Wilbur M. Urban, Dartmouth

Speakers: Charles Bouglé, Sorbonne (La philosophie, la democratie, et la paix)

Erich Becher, Munich (Darwinism and international relations)

Coriolano Alberini, Buenos Aires

Roscoe Pound, Harvard (The part of philosophy in international law)

9:30 A.M. DIVISION A, SECTION 4. OPEN SESSION

Chairmen: Alfred H. Lloyd, Michigan; John E. Boodin, Carleton

Speakers: Edgar S. Brightman, Boston (Personalism and the influence of Bowne)

Richard Müller-Freienfels, Berlin (Das Problem der Individualität)

Edwin A. Burtt, Chicago (Real vs. abstract evolution)

Giovanni Vidari, Turin (Alcune reflessioni sui rapporti fra morale e religione)

Eugene W. Lyman, Union Theological Seminary (Religion and ethics)

9:30 A.M. DIVISION B, SECTION 4. OPEN SESSION

Chairmen: H. W. Stuart, Leland Stanford; Walter T. Marvin, Rutgers

Speakers: J. E. Heyde, Greifswald (Das Erkenntnisproblem im Lichte der Philosophie Johannes Rehmkes)

W. M. Kozlowski, Posen (La pensée considerée comme action)
A. E. Heath, Swansea, Wales (The notion of intelligibility in scientific thought)
Karel Vorovka, Prague (Analyse de la relation causale à l'aide du concept du "l'action suffisante")
C. J. Ducasse, Brown (A neglected meaning of probability)
Henry M. Sheffer, Harvard (Notational relativity)

9:30 A.M. DIVISION C, SECTION 4. OPEN SESSION
Chairmen: Arthur Hill Daniels, Illinois; Mary Mills Partrick, New York
Speakers: Hilda D. Oakeley, London (The perspective theory of knowledge in relation to history and ethics)
Paul Lapie, Sorbonne (Moral education in the French schools)
Giacomo Tauro, Cagliari (Schools and education in the new Italy)
J. B. Kozak, Prague (The basis of objective judgments in ethics)
K. Wize, Posen (Les categories éthiques et les vertus)

9:30 A.M. DIVISION D, SECTION 4 (*second session*)
Subject: Contemporary philosophy. Reports on present tendencies in different countries
Chairmen: E. L. Schaub, Northwestern; Woodbridge Riley, Vassar
Speakers: Wincenty Lutoslawski, Vilna (Poland)
Fernando de los Rios, Granada (Spain)
Coriolano Alberini, Buenos Aires (South America, with special reference to Argentine)
Erich Becher, Munich (Germany, read by title)
G. Kuwaki, Tokyo (Japan)
Vladimir Ivanowsky, Minsk (Russia)
Charles Bouglé, Sorbonne (Philosophy in France and the sociological movement)
S. Radhakrishnan, Calcutta (The doctrine of Maya)

2:30 P.M. DIVISION B. GENERAL SESSION
Subject: Continuity and discontinuity among the sciences
Chairmen: Frank Thilly, Cornell; F. J. E. Woodbridge, Columbia
Speakers: Federigo Enriques, Rome
Erich Becher, Munich
W. E. Hocking, Harvard (Mind and near-mind)

4:30 P.M. BUSINESS MEETING

7:15 P.M. DINNER